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URBAN UNEMPLOYMENT IN EAST AFRICA: AN ECONOMIC ANALYSIS OF POLICY
ALTERNATIVES

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Any views expressed in this paper are those of the authors. They should not be interpreted as reflecting the views of the Institute for Development Studies or of the University College, Nairobi.

I. Introduction

The economies of East Africa are presently experiencing a phenomenon which to many trained in conventional economic analysis must appear most curious and puzzling. Despite the existence of positive marginal products in agriculture and significant levels of urban unemployment, rural urban labour migration not only continues to exist but, indeed, appears to be accelerating. Conventional economic models with their singular dependence on the achievement of a full employment equilibrium through appropriate wage and price adjustments are hard put to provide rational behavioural explanations for these growing levels of urban unemployment in the absence of absolute labour redundancy in the economy as a whole. Moreover, this lack of an adequate analytical model to account for the unemployment phenomenon often leads investigators to expound a plethora of rather amorphous and dubious explanations ranging from the "bright lights" of the city to downright irrationality of school leavers to account for this perplexing phenomenon.

Although a precise statistical measurement of urban unemployment in East Africa has rarely been attempted owing to conceptual difficulties of definition and manpower constraints on actual data collection, few if any economists and economic planners acquainted with the situation in East Africa would deny that the problem of open unemployment in the modern urban economy is beginning to reach very serious proportions. Fortunately, the unemployment problem in East Africa is not yet compounded by the existence of severe population pressure relative to the availability of arable land as is the case of a number of countries in Asia. Nor have the cities of East Africa yet evolved into the prototype of islands of modernity and affluence surrounded by a sea of slums so typical of the favellas of Latin America. But they are no doubt moving very rapidly in this direction. And so, the question of how the urban unemployment problem is to be attacked has recently been given very high priority both by politicians and planners in Kenya, Tanzania, and Uganda. Numerous policy proposals have been put forth. Some have been acted upon while many still remain in the proposal

stage. Among others, the following policies can be singled out for attention:

1. Immediate and direct employment creation either by government fiat or as in the case of Kenya's "Tripartite Agreement" of 1964 by some "voluntary" agreement among employers, trade unions and government.
2. The expansion of urban employment opportunities directly and indirectly through accelerated programs of industrial investment and growth. The literature on development strategy is permeated with arguments emphasizing the multidimensional benefits of industrialization, for example, through policies of import substitution. East Africa was an early, if somewhat reluctant advocate of rapid industrialization. However, the difficulties of overemphasis on industry are now becoming painfully apparent.
3. Attempts to prevent the urban wage from rising too rapidly in the absence of full wage flexibility.
4. Increased rural investment in the form of extension services and settlement schemes designed to make rural life more attractive.
5. Moral Exhortations (e.g. in Kenya) for the urban unemployed to "return to the land". And finally
6. Enforced "back to the land" programs of the Tanzanian variety.

In this paper, we shall attempt to evaluate the likely efficacy of these alternative policies for reducing urban unemployment. However, in order to analyze policies one must first specify the causal mechanism underlying the phenomenon of urban unemployment. This is especially true in view of the particular economic and social milieu in East Africa. Consequently, we shall first formulate a model of rural-urban migration which we believe provides an acceptable first approximation of the socio-economic realities in the three East African countries.

II. A Two-Sector Model of Migration with Unemployment¹

The basic model which we shall employ can be described^{as} a two-sector internal trade model with unemployment. The two sectors are the permanent

urban and the rural. For analytical purposes we shall distinguish between sectors from the point of view of production and income. Specifically, it is assumed that the urban sector specializes in the production of a manufactured consumer good, part of which is exported to the rural sector in exchange for agricultural goods. The latter sector has a choice either of producing only a single agricultural good some of which is exported to the urban sector using all available labour or using only part of its labour to produce a smaller amount of this good while exporting the remaining labour to the urban sector in return for wages paid in the form of the manufactured good. Thus/^{we}do not assume that the agricultural sector is characterized by "labour surplus" in the sense that a reduction of the labour input could be accomplished without any sacrifice of total output.² We are making the assumption, however, that the typical migrant retains his ties to the rural sector and, therefore, the income that he earns as an urban worker will be considered, from the standpoint of sectoral welfare, as accruing to the rural sector.³ However, this assumption is not at all necessary for our demonstration of the rationality of migration in the face of significant urban unemployment.

The crucial assumptions to be made in our model are first that the minimum wage paid in the urban sector is fixed at a predetermined level and is substantially higher than agricultural earnings and, second, that rural-urban migration will continue so long as the expected urban real income (defined below) at the margin exceeds real agricultural product - i.e. prospective rural migrants below as maximizers of expected utility.⁵ For analytical purposes, we shall assume further that the total urban labour force consists of a permanent urban proletariat without ties to the rural sector plus the available supply of rural migrants. From this combined pool of urban labour, we assume that a periodic random job selection process exists whenever the number of available jobs is exceeded by the number of job seekers.^{5a} Consequently, the expected urban wage will be defined as the fixed minimum wage (expressed in terms of manufactured goods) times the proportion of the urban labour force actually employed (see equation (6) below). Finally, we assume competitive behaviour on the part of producers

in both sectors with the further initial simplifying assumption that the price of agriculture (defined in terms of consumer goods) is determined directly by the relative quantities of the two goods produced.

Consider now the following mathematical and graphical formulation of the model.

Agricultural Production Function:

$$(1) \quad X_A = f_A(N_A, \bar{L}) \quad f'_A > 0, f''_A < 0$$

where,

X_A is output of the agricultural good,

N_A is the rural labour used to produce this output,

\bar{L} is the fixed availability of land, and f'_A is the partial derivative of f_A with respect of N_A .

Manufacturing Production Function:

$$(2) \quad X_M = f_M(N_M, \bar{K}) \quad f'_M > 0, f''_M < 0$$

where,

X_M is the output of the manufactured consumer good,

N_M is the total labour (urban and rural) necessary to produce this output,

\bar{K} is fixed capital stock, and f'_M is the partial derivative of f_M with respect to N_M .

Price Determination:

$$(3) \quad P_A = \rho \left(\frac{X_M}{X_A} \right), \quad \rho' > 0 \quad \text{where}$$

P_A , the price of the agricultural good in terms of the consumer good, (i.e., the terms of trade) is a function of the relative outputs of agricultural and consumer goods when the consumer good serves as numeraire.

Agricultural Real Wage Determination:

$$(4) \quad W_A = P_A \cdot f'_A$$

where, W_A , the agricultural real wage, is equal to the value of labour's marginal product in agriculture expressed in terms of the consumer good.

Manufacturing Real Wage:

$$(5) \quad W_M = f'_M \geq \bar{W}_M.$$

The real wage in manufacturing, expressed in terms of consumer goods, is equated with the marginal product of labour in manufacturing because of profit maximization on the part of perfectly competitive producers. However, this wage is constrained to be greater than or equal to the fixed minimum urban wage. In our analysis, we shall be dealing only with cases in which $f'_M = \bar{W}_M$ (i.e. there is never an excess demand for labour at the minimum wage).

Urban Expected Wage:

$$(6) \quad W_u^e = \frac{\bar{W}_M \cdot N_M}{N_u}, \quad \frac{N_M}{N_u} \leq 1$$

Where the expected real wage in the urban sector, W_u^e is equal to the minimum real wage \bar{W}_M adjusted for the proportion of the total urban labour force (permanent urban plus migrants denoted as N_u) actually employed, $\frac{N_M}{N_u}$. Only in the case of full employment in the urban sector is the expected wage equal to the minimum wage.

Labour Endowment:

$$(7) \quad N_A + N_u = \bar{N}_R + \bar{N}_u = \bar{N}$$

that is, there is a labour constraint such that the sum of workers employed in the agricultural sector (N_A) plus the total urban labor force (N_u) must equal the sum of initial endowments of rural (\bar{N}_R) labour which in turn equals the total labour endowment (\bar{N}).

Equilibrium Condition:

$$(8) \quad W_A = W_u^e.$$

Equation (8), an equilibrium condition, is derived from the hypothesis that migration to the urban area is a positive function of the urban-rural expected wage differential. This can be written formally as

$$(9) \quad \dot{N}_u = \phi\left(\frac{W_M \cdot N_M}{N_u} - P_A f'_A\right), \quad \phi' > 0, \quad \phi(0) = 0$$

where \dot{N}_u is a time derivative. Clearly then, migration will cease only when the expected income differential is zero, the condition posited in (8).⁶ It is important to note that this assumes that a migrant gives up only his marginal product. Other assumptions could be made. Much of the literature has stressed that in peasant economies producers receive their average product which is higher than their marginal product. Indeed, this is at the heart of the well known Lewis and Fei-Ranis models. [18] [6] However these models ignore the migration decision and seem to assume that migrants continue to receive their share of peasant production yet migrate only if jobs are actually available. In East Africa, it appears that migrants continue to receive income from land after migration and commonly hire labour to work on their farms in their absence. There is also a considerable group of landless individuals who work on farms for wages. Thus it would appear that our assumption is not unreasonable. The analysis could easily be modified to make earnings foregone equal to average product, however.

We thus have 8 equations in 8 unknowns (X_A , X_M , N_A , N_M , W_A , W_u^e , N_u and P_A) and given our production functions and the fixed minimum wage it is possible to solve for the equilibrium unemployment rate and, consequently, the equilibrium expected wage, relative output levels and terms of trade. Let us analyse the equilibrium and the overall adjustment process in terms of the following diagrammatic representations of the model.

Figure 1 brings together all 8 equations in terms of a four quadrant diagrammatic framework. The two production functions are shown in quadrants B and D. Given labor endowments as portrayed in quadrant C and these production functions, a hypothetical production possibility curve MQZT is generated in quadrant A. However, with a given and fixed urban real wage \bar{W}_u , we see from quadrant B that the maximum consumer goods output will be OF - i.e. that output at which $\bar{W}_M = f'_M$. Moreover, if we assume that the permanent urban labour endowment, \bar{N}_u , cannot be transferred to the agricultural sector, then the maximum attainable level of agricultural output would be OR as shown in quadrants A and D. Consequently, the operative production possibility curve is RQZF.

Now it is evident from this framework that the locus of full employment points is that shown by ZQ in quadrant A. And the only full employment point consistent with the prevailing minimum wage would be point Z. But is point Z an equilibrium point as defined in our model? No, because the expected urban wage ($W_u^e = \bar{W}_M$ at Z) is less than $P_A f'_A$ by assumption.

Consider the transfer of an additional worker from the rural to the urban sector, i.e. rural employment falls to $N_A^* - 1$ in quadrant D while the urban labour supply rises to $N_M^* + 1$ in quadrant B. We see from quadrant (B) that, given \bar{W}_M , this migration will result in positive urban unemployment thereby lowering the expected wage W_u^e (equal to the slope of AF) below the minimum wage \bar{W}_M (equal to the slope of AZ_M).^{6a}

But this expected wage is equal to $FG = DE = VS$ consumption goods. The loss in agricultural output (f'_A) is $X_A^* J = VZ$. But given the terms of trade, assumed to be the slope of Oa derived from (3), these VZ agricultural goods are equivalent to ZT consumer good. Since $ZT < VS = VQ'$ the migrant will gain income measured in terms of the consumer good, by leaving the farm. Alternatively, we see that his expected consumer goods earnings through migration VQ' is equivalent in value to QY agricultural goods at the terms of trade associated with point V on the actual production frontier. Since $Q'Y$ is greater than VZ the migrant also gains income measured in terms of the agricultural good. Consequently, we may conclude that there will be further migration and that equilibrium can be obtained only with urban unemployment.⁷ Even though such an equilibrium, say at point H in quadrant A at which (8) is also satisfied, necessarily implies a suboptimum situation from the point of view of the economy as a whole, it does represent a rational, utility maximizing choice from the point of view of individual rural-urban migrants and, as will be demonstrated below, will likely represent a welfare improvement for the rural sector as a whole.

One final procedural point might be raised at this juncture. So far we have assumed that the urban minimum wage is fixed in terms of the consumer good. What, if instead, the minimum wage were fixed in terms of the agricultural good? We would then substitute for equation (5)

$$(5') \quad W_M = \frac{f'_M}{P_A} \geq \bar{W}_M$$

Substituting (4) and (5') into (7) we get the equilibrium relationship

$$(9) \quad \frac{P_A f'_A}{N_u} = \frac{\left(\frac{f'_M}{P_A} \right) \cdot N_M}{N_u}$$

We can then imagine an economy starting initially at production point Z on the production possibilities frontier (Figure 1A) again assuming that

$P_A f'_A < \frac{\left(\frac{f'_M}{P_A} \right) \cdot N_M}{N_u}$ at that point. The adjustment process will again be reached through a simultaneous raising of $P_A f'_A$ and lowering of W_u^E . As relative agricultural output falls, P_A will rise. This in turn will cause output of the consumer good to fall since producers will produce only up to the point that $f'_M = \bar{W}_M$ which rises in terms of consumer goods, and f'_M can be raised only through output restriction ($f''_M < 0$). Therefore, in general we would find the equilibrium point lying southwest of Z and south of H. Output of both goods suffers. Whether this will cause more or less unemployment than in the initial case is indeterminate since N_M falls.

Although our initial assumption is a bit easier to handle, the principal conclusion remain unaffected if we make the minimum wage fixed in terms of the agricultural good. Equilibrium is only achievable with unemployment. Actual minimum wage setting is usually done with reference to some general cost of living index, and food is the largest single item in the budget of most urban workers [21], [23]. Hence, the second case may be somewhat more realistic. Note that in the first case the "true" real wage was reduced somewhat by the rising agricultural good price, while in the latter case it is increased by the falling price of the consumer good.

III An Evaluation of Alternative Policies

On the basis of the general model presented in Section II, let us now consider in turn the efficacy of the six policy alternatives listed in the Introduction.

(A) Employment Creation by Fiat or Voluntary Agreement

In an attempt to rectify the continuous trend of diminishing employment

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opportunities (a decline of 90,000 jobs from 1960 to 1964) in wage paying industries and the sharp rise in urban unemployment resulting in part from the serious school-leaver problem after independence, the government of Kenya negotiated a "voluntary" Tripartite Agreement in 1964 with the Federation of Kenya Employers and the Kenya Federation of Labour. The express purpose of this agreement was the creation of 40,000 new jobs in the shortest possible time. The Agreement was that the Public Services were to increase the number of their employees by 15 per cent. For their part the private employers were to expand job opportunities by 10 per cent while workers were to abide by a one year moratorium on wage increases and refrain from strike action. [38] Although the participants to the agreement would probably be the first to admit that it was merely a stop-gap measure, there is considerable doubt whether in fact the agreement was even a short run success. It is true that many new jobs were created in spite of the obvious financial problems faced by local authorities as well as the Central Government. But the important questions to ask in the context of the model of Section II are; first, in the longer run was the resulting job creation greater than that which would have been forthcoming had there been no agreement; and, second, what was the impact of the agreement on rural-urban migration and, ultimately, on urban unemployment?

Our model would indicate that, at least for private employers, immediate job creation in the absence of simultaneous wage reductions could be achieved only at the expense of higher unit costs. Thus, one might expect that in the longer run employers would attempt to neutralize the initial effect of excess labour inputs by slowing down the normal rate of further job creation as output expands, and/or by failing to replace those who leave their jobs with new employees. At least one well known observer of the East Africa scene feels that this was in fact the experience of Kenya following the agreement ([13], p 183 fn. **).

Concerning the indirect effect of the agreement on the volume and level of urban unemployment, our model would indicate that the immediate creation of new urban jobs would upset the unemployment equilibrium by raising

expected urban incomes. This would stimulate further rural-urban labour migration and could quite conceivably lead to higher levels of urban unemployment if the labour force were to expand by more than the number of actual new jobs created. Solid evidence on this question is not available so that we can only limit ourselves here to confirmatory educated judgement ([13] p. 185). But, indeed, it is very doubtful from the strictly economic viewpoint (as opposed to the political considerations involved) whether the Tripartite Agreement or, for that matter, any agreement either voluntary or by fiat which attempts to bypass the dictates of ^{economic} forces is likely to meet with more than very limited success.

(B) Accelerating Industrial Growth

A common panacea often prescribed by economists for all the ills of developing nations is rapid industrialization. At least one well known treatise on economic development defines the success of various development processes in terms the ability of countries to reallocate a majority of its labour force from agriculture to industry. Unfortunately, most cross-sectional and time-series evidence of the relationship between industrial growth and employment generation in less developed countries provides a uniformly consistent picture of a significant employment lag.

It is well-known that in the three East African countries this employment lag has not only been significant but for quite a prolonged period ^{there} (late fifties and early sixties)/was in fact a negative relationship - i.e., employment in manufacturing actually declined absolutely while output expanded. Numerous reasons can be cited to account for this phenomenon among which the rapid rise in urban wages, the increased mechanization of production, and the improved efficiency of those already employed as a result of learning-by-doing and on-the-job training programs might be singled out as the most important. The crucial point to be made in this context, however, is that even though rapid urban industrial growth, if successfully achieved, might indeed create more employment opportunities, it will also accentuate the influx of rural migrants if simultaneous steps are not taken to reduce rural-urban real-wage differentials. Consequently, the net result of increased industrial growth might not only be an increase in urban employment but also a concomitant

increase in urban unemployment. Consider the following argument.

Elsewhere, on the basis of a dynamic model of rural-urban migration based on expected wage differential it has been shown that in order to prevent the urban unemployment rate from rising in response to widening urban-rural wage differentials, the following relationship must be satisfied ([32] p. 11):

$$(10) \quad d\gamma = \frac{-\gamma^2 d\alpha}{\gamma d\alpha - \gamma\beta - \alpha\beta - \beta d\alpha}$$

where,

γ is the rate of urban employment growth,

α is the percentage urban-rural wage differential, and

β is the natural rate of permanent urban labour force growth - i.e., labour growth net of rural-urban migration.

Therefore, given an unemployment rate, equation (10) tells us by how much the annual rate of job creation must increase ($d\gamma$) just to keep the unemployment rate from increasing if there is further widening of the urban-rural percentage wage differential ($d\alpha$). For example, suppose an economy is initially characterized by an annual rate of employment creation in the urban sector of 4 percent ($\gamma = .04$), a natural rate of urban labour growth of 2 percent ($\beta = .02$) and a 100 percent urban-rural wage differential ($\alpha = 1.0$). On the basis of these parameters an equilibrium unemployment rate will result. Suppose that the urban-rural earnings differential widens by another 20 percent ($d\alpha = .20$). It follows from the above equation that in order to prevent the urban unemployment rate from rising, the additional increase in the annual rate of job creation ($d\gamma$) must be 1.9 percent (i.e. $d\gamma = .019$). Thus, the growth rate of urban employment opportunities must rise from 4 per cent to 5.9 per cent. Since empirical studies of the relationship between industrial output and employment growth in less developed nations have indicated that for every one per cent increase in the rate of job creation total output must expand by approximately an additional 3.5 per cent [33] we see that in our hypothetical example industrial output growth must increase from 14 per cent per annum ($3.5 \times .04$) to almost 21 per cent per annum just to prevent the unemployment rate from rising. Conversely, equation (10) tells us that if the rate of industrial output growth were to expand by half from 14 to 21 percent annually, the equilibrium urban unemployment rate would remain unaffected if the

urban-rural earnings gap is allowed to widen by an additional 20 percent (a not at all unlikely phenomenon).

Despite the hypothetical nature of the above illustration, it does underline in a simple and plausible way the immense problem of reducing urban unemployment rates through accelerated industrialization without a simultaneous and concentrated effort designed to prevent a further widening of the urban-rural earnings differential. As long as urban real income is permitted to expand at a relatively faster pace than rural income, induced growth of labour migration will counter much of the effect of accelerated industrial growth in reducing urban unemployment. . . . Moreover, this same analysis would appear to be valid for a whole range of policy alternatives such as employment subsidies, direct government hiring and industrial tariff protection all of which are means of expanding employment while maintaining high (and increasing) industrial real wages.

C. Exhortation to Return to the Land

Exhortations that individuals should return to the land to seek opportunities in agriculture rather than migrating to the cities in a vain search for jobs have been heard repeatedly in recent speeches of East African political leaders. While these exhortations are admirable and economically sound, their long run success is highly doubtful. If our model correctly describes the situation (and the Royal Commission in Kenya ⁽⁵⁾ agreed), it is in the rational self-interest of individuals to seek urban employment even though the probability of actually gaining such is low. Throughout history policies of moral suasion have typically met with limited success in persuading individuals to abandon their self-interest. When social and private benefits diverge it is a rare phenomenon when private calculations do not prevail.

D. Rural Development Schemes

A spate of proposals designed to increase rural real incomes and amenity levels have been advanced in recent years. Some of the simpler ones have been concerned with provision of amenities such as electricity, piped water, clinics, cinemas etc. in rural areas so as to reduce the relative attraction of urban areas particularly for school leavers. Other proposals have included rural settlement schemes, extension services, and training centres. Still

others have stressed the importance of locating industry in rural areas so as to spread non-agricultural employment opportunities.⁸ Finally, Norbye has proposed an extensive program of labour-intensive rural works schemes(). All of the proposals have one common denominator -- they represent attempts to reduce the urban-rural disparities in real income (where real income includes effects of amenities) and thus the magnet effect of the city.

The important question here is whether it is in fact possible to reduce real wage disparities sufficiently through these schemes to eliminate urban unemployment. Existing disparities in the distribution of amenities are considerable.⁹ As such, differences in money wage levels (corrected for cost of living) understate the true real (or utility) wage differentials. Moreover, it is inconceivable that any feasible change in amenity levels could counter the effects of existing money wage differences. Note that most proposals are designed to equalize amenity levels -- a reversal of the inequality would be necessary to cut seriously into urban unemployment. (Furthermore, many amenities require money expenditure as well if they are to be taken advantage of).

Settlement, extension, and training schemes, if effective, will increase real rural income and, therefore, will work towards a partial reduction of urban-rural differentials. However, once again it is unlikely that these will raise agricultural productivity sufficiently to close the gap. Furthermore agricultural price levels are likely to fall with rapid expansion of output.

Locating industry in rural areas raises further interesting questions. If minimum wage legislation is to apply to such enterprises, we are likely to find a dispersal of open unemployment into smaller centers. Migrants will be coming to these centers vainly seeking employment rather than flocking to Nairobi, Dar es Salaam or Kampala where they tend to be more visible.¹⁰ Whether a given amount of investment will create more employment if it is dispersed in rural areas is a moot point but the usual arguments concerning economies of agglomeration suggest the contrary. If, on the other hand, rural industries are not to be subject to minimum wage legislation, and/or net additional investment will be forthcoming to establish them, they will

help to reduce unemployment. However, as long as higher wages continue to be paid in the major urban areas, open unemployment will persist.

Norbye's proposal for rural works programmes is particularly interesting.¹¹ It would be likely to reduce urban-rural real wage gaps in two ways. First, individuals could be employed in such projects during non-peak periods in agriculture. Therefore, they would sacrifice less agricultural income in accepting such employment than in migrating to urban areas. Furthermore, the effect of feeder roads, irrigation systems, dams etc. to be built in such a program will be to raise agricultural productivity -- thus further reducing real income differentials. Nevertheless such programs will require scarce organizational resources if they are to be successful and will also place substantial burdens on the fiscal system (or on external aid sources as Norbye recognized) for their finance. However, so long as actual urban wages continue to be high relative to real rural earnings (our previous argument still holds that even these programs are unlikely to close the gap in the foreseeable future), urban unemployment will still persist albeit at somewhat lower levels than at present.

E. Enforced Back-to-the-Land Movement.

We've already seen that although migration in the face of unemployment is rational from an individual's point of view, it gives rise to foregone output from the standpoint of the economy as a whole. Looking back at Figure 1 it is obvious that if migration in excess of the number of urban jobs were prohibited, the economy could produce at Z instead of H. This would be unambiguously superior since the same amount of the manufactured good would be produced and there would be more of the agricultural good. Clearly there is a divergence between private and social incentives. In such a case restriction of individuals' free choice may be warranted.

Tanzania has attempted to institute such a program. Individuals in urban areas must hold a card stamped to show that they are presently employed. If they cannot produce such a document they are subject to being returned to their home (rural) area.^{11a} [35] Although we know that the economy as a whole must be better off under such an arrangement, some individuals or sectors of the economy may be made worse off in the absence of compensation.

It is tempting to take the position that this is unimportant since there is potential for lump-sum compensation such that some are made better off and none worse off. However, lump-sum compensation is notoriously difficult to arrange in an actual economy. Therefore, a useful question to explore is whether the rural sector as a whole (including its "labour exports") will be made better or worse off by a policy of forced repatriation in the absence of compensation.

We have shown elsewhere that the rural sectors' gain in "production" of the manufactured good from exporting one additional unit of labour in the face of urban unemployment is equal to $W_u^E (1-R)$ where R is the fraction of rural migrants in the urban labour force $(\frac{1}{2})$. The logic is quite clear. The additional migrant earns the expected wage but his entry into the urban labour force, by raising unemployment, lowers the expected wage of all other migrants by the factor R . Thus the gain to the sector is less than the apparent gain to the individual migrant.

From a production standpoint the rural sector gives up an amount of the agricultural good f'_A as a result of exporting the one additional unit of labour. However, the reduction of agricultural output will cause its price P_A to rise. Hence the loss of sectoral income (measured in terms of the manufactured good) resulting from foregone output of the migrant is $P_A f'_A (1 - \frac{1}{n})$ where n is elasticity of the permanent labour force's offer curve of the consumer good in exchange for the agricultural good. ([12], Appendix A) This quantity is less than the value of the marginal product of labour in agriculture ($P_A f'_A$) because of the price effect and, indeed, if $n < 1$ (inelastic demand) it will be negative! This of course is no more than the familiar proposition that aggregate farm income may be reduced in years of plentiful harvests. Thus we see that individuals overstate the loss of output accompanying their departure from agricultural production.

It is clear from the above that whenever $P_A f'_A (1 - \frac{1}{n}) < W_u^E (1-R)$ it will be in the interest of the rural sector as a whole to allow migration even with resultant unemployment. Individual decisions (migrate if $P_A f'_A < W_u^E$) will lead to less than optimal migration from the sectoral standpoint if

$\frac{1}{n} > R$, a likely result since $R < 1$ and in many cases $n < 1$.

In light of Tanzania's expressed policy to increase rural well being (24) it is ironic that the most likely effect of a forced back-to-the-land policy is a reduction in the welfare of the rural sector. Meanwhile the permanent urban labour force will benefit substantially through full employment at the high minimum wage.

This conclusion depends on the absence of compensation to the rural sector accompanying the policy of forced repatriation. In fact at least two forms of compensation are being offered. Tanzania is assisting the repatriates to find land in various settlement schemes. Although settlers are expected to repay some capital and land costs advanced through loan schemes there is some subsidy involved and extension services also serve to raise the level of rural earnings above the marginal product of labour in agriculture which we have posited. Furthermore, there are various schemes of price support for agricultural goods. If agricultural output can be exported at constant prices (not entirely likely since demand for coffee under the international quotas and sisal is quite inelastic (14) although adjustments in export taxes and marketing board margins could conceivably keep producer prices constant) or if domestic prices are supported at constant prices, then rural welfare may actually be increased by the back-to-the-land policy. In this case n is infinite and private decisions result in more migration than is in the interest of the sector since $R > 0$. Still some migration with unemployment may be in the interest of the sector since the criteria for migration to lead to an increase in sectoral welfare becomes $P_A f_A' < W_u (1 - R)$ and at Z we know that $\frac{P_A f_A'}{W_M}$ is in the range of $\frac{1}{4}$ to $\frac{1}{2}$.

(15) We can conclude under such conditions that some forced repatriation will benefit the sector although it cannot be determined without more specific data whether the move from H to Z (Figure 1) will benefit the sector as a whole even with price supports. Supporting domestic agricultural prices above the market clearing level also gives rise to the problem of agricultural surpluses and their financing.

In summary, Tanzania's policy represents a promising approach to the problem of urban unemployment. It will unambiguously benefit the economy

as a whole but some form of adequate compensation will have to be given the rural sector as a whole if it is not to be made worse off by the policy.^{11b}

Flexible Wages

The classic economic solution for the problem we are dealing with here is to allow wages and prices to become fully flexible through abolishing minimum-wage legislation. Clearly, if labour markets operate competitively and without legislative constraint urban wages will fall to approximate equality with rural earnings for workers of comparable skill. (If there are real costs of migration or disutility associated with urban living a positive differential will remain. This issue is treated in detail by Hagen (). Lower urban wages will cause employers to substitute labour for capital and total urban employment will expand. At the same time the reduction in wage differentials will cause some unemployed migrants to return to agriculture and further migration will be induced only as new urban jobs are created. The economy will be free to produce on the production possibilities frontier (because all resources will be fully utilized) northwest of Z. Preferences of consumers reflected in prices will lead the economy to reach an optimum optimorum.

Even if this prescription is correct it is politically infeasible in the present East African situation. Trade unions are in a strong position vis a vis the relatively small and concentrated "modern sector" employers (the most important of which is government). Furthermore urban workers and their organizations are more politically informed and able to bring pressure on governments. Governments, however, are not unaware of the problems raised by relatively high urban wages. Mboya has stated:

The role of trade unions may also have contributed to the unemployment problems. We must come to grips with a rational incomes policy which relates increases in wages to gains in productivity if we are to avoid serious problems..... Trade Unions should also be thinking in terms of the national welfare before meeting with employers over the bargaining table... Unless the Unions turn their attention to these matters they may find that their present policies are creating substantial inequities in income distribution. ([4 4] , p. xviii.)

Indeed the most promising feasible approach appears to be one of restraint on increases so as to keep relative wages constant. ([7] , p. 7). Even this more modest task has not been accomplished to date. Ghai shows that

in Kenya between 1960 and 1966 "the average total income of farmers has risen half the rate of unskilled, urban workers." (17, p. 3) Helleiner presents data suggesting that in Tanzania between 1962 and 1965 the real wage in private commerce increased by 42 per cent (38 percent in the public sector) while real income of smallholders increased by only 8 per cent. Even allowing for weakness in the underlying data the conclusion is inescapable that real wage differentials have been increasing.¹² The earlier discussion (part III B above) made the point that with increasing differentials the economy will be required to attain unrealistically high rates of industrial expansion just to keep unemployment rates constant (implying increasing absolute levels of unemployment). In fact it would appear that the East African economies will be hard put to expand urban employment at a sufficient rate to keep unemployment rates constant even with unchanging urban-rural wage relatives.

Two justifications for high urban wages have been raised by Green. (7) The first is that high wages increase worker productivity thereby leading to lower unit labour costs. One possible explanation is that better fed and housed workers are able to work more productively (this is a variant of the "minimum decent standard" argument). We are inclined to question the quantitative significance of this in the East African situation.¹³ Another explanation forwarded by Green (without convincing evidence) is that employers are irrational. "Labour in East Africa came to be treated virtually as a free good with serious effects on efficiency and cost levels." (p. 218)¹⁴ While it may be true that high wages act as a shock treatment forcing employers to improve organizational methods, it would seem that increased competition and lower levels of protection might be just as effective in forcing entrepreneurs to produce efficiently.

Green also takes a second line of attack. "Markets for manufactured products and commercial food production are basically dependent on total wage and salary payments. To the extent that higher wage levels raise total payments, they expand these markets." (p. 217). A model could be constructed that would demonstrate such a relationship. What is required is very high income elasticities of demand by urban workers for products in which economies of scale are significant. It is interesting to note

that this line of argument has become quite popular in Kenya of late and has received wide circulation in the form of newspaper editorials as well as in parliamentary debate. The argument is at first appealing in terms of a very simple Keynesian framework of demand multipliers. Under closer examination it becomes rather dubious. First of all it is hard to argue that demand is a binding constraint on aggregate output in Kenya.¹⁶ Secondly, even if a constraint existed it is by no means certain that higher wages will in fact increase demand. Green asserts ([9] p. 223) that demand for labour is in fact wage elastic in East Africa. If this is true, then higher wages will reduce the total urban wage bill. He weakens his argument further by pointing out (p. 226) that higher wages will lead to inflationary pressure on the balance of payments and government deficit and may increase the savings-investment gap. Furthermore, important questions of social equity arise if wage increases widen the rural-urban income differential. One must recognize that in East Africa labour in the modern sector represents a relatively privileged minority.

Even if we were prepared to accept these dubious justifications of high wages the unemployment problem would remain. A real divergence between maximizing output and employment would arise. Our model suggests strongly that with higher urban wages, open urban unemployment would rise in the absence of physical controls on migration.

Research is needed to estimate empirically the probable effects of lower wages on urban employment. It is quite certain that the full effects would be felt only over time -- the wage elasticity of labour demand will be higher over a long time period than in the immediate short run. However, looking only at this side of the question is to miss the point of our analysis. To take an extreme case, imagine that urban wages were cut substantially but no additional urban employment opportunities were generated. Our model suggests that nevertheless unemployment would be reduced since the accompanying reduction in expected wages would cause unemployed migrants to return to agriculture even though rural earnings remained unchanged (in a dynamic context the rate of rural-urban migration would fall thereby reducing unemployment levels even if urban-rural migration flows were nil).

A standard prescription to counter the effect of high minimum wages is the provision of a wage subsidy or expanded direct government employment in accordance with a shadow-price criterion. Thereby, social costs are equated with net private costs of employment and the economy should reach the same position that it would if wages were free to adjust.¹⁷ Such a policy, through lowering the net private costs of labour would give rise to expanded employment. However, as long as the minimum wage continues to be paid to employees, the additional employment will raise expected wages through a higher probability of finding a job and induce additional migration. It is possible that the level of unemployment will be increased as a result of the policy.

IV. Summary and Conclusions

We have examined a number of proposed policies designed to reduce open urban unemployment in East Africa. Our analytical framework has been a model based on the hypothesis that migration is a response to expected income differentials, the starting point of the analysis being the existence of minimum urban wage levels substantially higher than earnings of individuals with comparable skill in agriculture. In such a situation urban unemployment serves to reduce the expected urban wage and indeed serves as the equilibrating factor. Individual migration to urban areas in the face of substantial open unemployment is shown to be a rational response from individuals seeking to maximize expected utility.

If this model correctly captures behavioral relationships in the present East African economies it follows that asking individuals to voluntarily return to the land will be opposed to their self interest. Furthermore, various proposals to expand urban employment (e.g., accelerated industrialization through direct government participation, wage subsidies, or protection) will fail^{to} eliminate open unemployment so long as wages significantly higher than rural earnings continue to be paid.

Enforcing^a back-to-the-land movement represents an unambiguous improvement from the standpoint of the economy as a whole. However, if such a policy is not accompanied by some form of subsidy to the rural sector it may be made worse off by the policy. Where rural welfare is an important social consideration this point becomes important. ^{in spite of obvious drawback} We would therefore conclude that

Tanzania's recent experiment is a promising step in the right direction.

However, it would appear that the best policy (given the ^{apparent} political infeasibility of reducing relative urban wages) would be some combination of industrial expansion (with the intention of equating marginal value products in the two sectors) and migration restriction. Governments, no doubt, are caught in a dilemma. Neither eliminating minimum wage legislation nor placing physical controls on migration are likely to ^{be} politically palatable although the latter policy may be more feasible. The alternative, however, is to continue to suffer substantial and growing levels of open unemployment in urban areas.

The long run implications of this phenomenon (i.e., the loss of potential output, and perhaps more importantly, the proliferation of social and political unrest) are now becoming painfully clear to the governments of East Africa. Several attempts to come to grips with the issue have been made in recent times. However, unless the interrelationships between rural-urban earnings differentials, job creation, and migration are fully appreciated, policies directed towards only one aspect of the problem are likely to make a minimal lasting impact on urban unemployment.

FOOTNOTES

- * The authors are currently Research Fellows under the auspices of the Rockefeller Foundation at the Institute for Development Studies at University College, Nairobi. They are on leave from Massachusetts Institute of Technology and Stanford University respectively. They would like to thank the Rockefeller Foundation for making their research on economic problems of East Africa possible.
1. This is a condensed version of a more general and rigorous mathematical model developed by the same authors in an earlier paper (12).
 2. We do not make the special assumption of an agricultural labour surplus for the following reasons. Most available empirical evidence to date tends to cast doubt on the labour surplus argument in the context of those economies of Southeast Asia and Latin America where such a surplus, if it did exist, would most likely be found (4) (25) (30) (37). Moreover, few economists would seriously argue that a general labour surplus as usually defined exists in East Africa, the area of immediate consideration.
 3. In East Africa, this notion that migrants retain their ties to the rural sector is quite common and manifested by the phenomenon of extended family ties and remittances to rural relatives of large proportions of urban earnings. However, the reverse flow, i.e. rural-urban monetary transfers, is also quite common in cases where the migrant is temporarily unemployed and, therefore, must be supported by rural relatives. See (34) especially study of Lushoto district.
 4. For some empirical evidence of the magnitude of these earnings differentials in East Africa see Ghai (7), Helleiner (14) and also International Labour Office (16). For comparable estimates of these differentials in a cross-section of less developed countries including those of Africa, see Berg (2).
 5. For a lengthy and detailed description of the rationale of such a probability model of labour migration, see M. Todaro (39).
 - 5a Again, the qualitative conclusions of the model do not depend on the precise nature of the selection process. All that is necessary is that the expected wage be positively related to the minimum wage and inversely related to the level of unemployment, ceteris paribus. We have assumed random selection, however, not only for analytical convenience but also because it directly corresponds to an appropriate dynamic construct developed in Todaro (39). There it is shown that over time expected and actual earnings will converge to a positive number even though the rate of job creation is less than the rate of migration so that unemployment is increasing.
 6. $\phi(0) = 0$ is purely arbitrary. If, instead, we assume $\phi(\alpha) = 0$ where α can take on any value, migration will cease when the urban-rural expected wage differential is equal to α . None of the subsequent analysis is affected qualitatively by specifying $\alpha \neq 0$. (8) would merely be written as $W_A + \alpha = W_u^e$.
 - 6a Note that AE is the total wage bill in the manufacturing sector (equal to $W_M N_M$). The expected wage is equal to this constant wage bill divided by the total urban labour force, N_u - i.e., the slope of the line originating from A and intersecting line EF at a point vertically above the point on the horizontal axes representing the total urban labour force.
 7. It is theoretically possible, but not likely, that the institutional minimum wage could be equal to the free market full employment equilibrium wage in which case the actual and expected urban wage would be identical. In such a case conventional analysis suffices.

8. These proposals are admirably summarized by Mboya (22). See also the papers by Van Arkadie (36), Mac Arthur (19) and Odinga (26).
9. Same idea of current disparities in Tanzania can be found in (40).
10. Whether the absolute level of unemployment is affected by such dispersal depends on the response of migrants to given expected wage differentials in different size centers. We are now beginning research in Kenya which will test, in addition to other questions, whether city size is an independent determinant of migration inflows.
11. See Norbye (27). He refers to the successful experience with such schemes in East Pakistan which has been documented by Gilbert (8). Hagen (11) pp. 309-13) contains a useful analysis of these schemes which also receive theoretical rationale in Bardhan (1).
- 11a Enforcement of this policy received considerable attention in The Nationalist (Dar es Salaam), during the early months of 1968. Initiative for enforcement lies with local authorities and as such has received sporadic attention.
- 11b It is interesting to note that Tanzania is already experiencing difficulties in keeping these repatriated urban unemployed on farm settlements. This is not too surprising given the substantial expected real earnings differential. Either better quality land or more adequate compensation is probably required. However, in the absence of measures to reduce urban wages, even these costly policies are likely to achieve only limited long run results.
12. The Tanzania case is also documented by the I.L.O. (16) and Knight (17) has shown that similar trends have been taking place in Uganda.
13. It is true that as incomes rise expenditures on food increase and indeed there is a shift towards higher quality protein foods. Howe (15) estimates income elasticities of Nairobi families of .17 for all food, .45 for milk and eggs, and .33 for meat and fish. The estimates for Kampala are significantly higher but fail to adjust for family size. Estimates for smaller Uganda towns (when income is defined and include subsistence production) are quite similar to Nairobi estimates. He also has evidence that at low income levels individuals receive net assistance from relatives in rural areas while at higher levels of income reverse flows occur. As such the elasticity estimates may overstate the real rise in consumption of wage earners as income rises. Certainly the existence of substantial sharing of income with members of the extended family by workers earning the minimum wage belies the contention that this wage is a minimum required by the wage earner to provide a minimum decent living standard for his immediate family. The evidence is fairly strong that at lower wages less would be shared.
14. A similar point has been made by Soper (28)
15. See the main editorial in The Daily Nation (Nairobi, 20 September 1968)
16. See Massell (20) for an analytic treatment of the problem in aggregate terms stressing the importance of both foreign exchange and savings constraints. This matter has attracted considerable professional attention of late, particularly in the "two-gap" models of Chenery and Strout (3). Schatz (29) has argued the case for demand stimulation when such demand is channeled only to industries with elastic supply conditions. While the argument is logically correct, it is highly questionable that extra demand can be so narrowly channeled. Stolper (31) has challenged Schatz's position.
17. We have examined this case in considerable detail in our earlier paper (12). A clear exposition of the shadow pricing argument can be found in Hagen (10 p. 498).

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